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manufacture having fiber reinforced polymeric composite components with the coatings.

In one aspect of the invention, and as set forth in independent Claim 1, a fiber reinforced composite material is provided. The composite includes a fiber reinforced polymer substrate; a first polymeric layer coating the fiber reinforced polymer substrate for joining two different polymeric composites, the first polymeric layer being free of fibers and particulate; a second polymeric layer coating the first polymeric layer, the second polymeric layer including a polymeric matrix and a particulate within the polymeric matrix; and at least one thermally sprayed material coating the second polymeric layer to form an adherent multi-layer coating attached to the fiber reinforced polymer substrate.

Hatch et al relates to liquid transfer rolls or the like. More particularly, it relates to a sleeve adapted to be mounted on a mandrel to form a liquid transfer roll for use in transferring an accurately metered quantity of a liquid to another surface. Col. 1, lines 7-14.

Hatch et al does not disclose or suggest the features of the present invention. For example, Hatch et al does not disclose or fairly suggest a fiber reinforced composite wherein the thermally sprayed material coats the second polymeric layer. In this regard, Hatch et al states:

The rigid metal outer tube 29 is made of aluminum, an aluminum alloy or steel, preferably stainless steel. Tube 29 may be coated, preferably thermally coated with a wear resistant coating 31, which may be laser engraved Col. 7, lines 43-47.

Clearly, the thermally sprayed coating disclosed in Hatch et al is disposed on a rigid metal outer tube and not on a second polymeric layer, as in the present invention. Therefore, it cannot be asserted that the assembled sleeve and the claimed composite are the same.

Further, aside from the thermally sprayed coating, the remainder of the sleeve in Hatch et al is prefabricated and assembled together to form an integral unit. In this respect, Hatch et al discloses that:

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The prefabricated sleeve assembly and the metal outer tube may be interconnected by glue or in any other suitable manner to define an integral unit, and the rings 33 and 34 may be inserted at the axial ends of outer tube 29 as illustrated in FIG. 2. Subsequently the sleeve may be mounted on a mandrel and the outer tube 29 may be finished and thermally coated with wear and corrosion resistant coating 31. Coating 31 may be laser-engraved and finished as described above. (Emphasis added.) Col. 7, line 61 to col. 8, line 6.

Thus, as explained in Hatch et al the components of the sleeve are prefabricated and assembled together with the metallic outer tube, which is ultimately spray coated. By comparison, the layers of the fiber reinforced composite claimed are coated onto one another in the manner specified. Simply put, the prefabricated and assembled sleeve of Hatch et al does not teach the reinforced composite of the present invention where the layers are coated onto one another in the manner specified. Accordingly, for the foregoing reasons withdrawal of this rejection is in order and it is respectfully requested.

Claims 1-12 and 14-16 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al in view of Hess et al (U.S. Patent No. 3,698,053). This rejection is traversed for the following reasons.

Hatch et al has been discussed in detail above. Hess et al relates to rolls for machinery and in particular to rolls utilized in paper making machinery. Hess et al has been relied on for the alleged disclosure of cylindrical mandrel comprised an epoxy polymer matrix reinforced with carbon fibers. Official Action at page 4.

Hess et al, however, does not cure the above-described deficiencies in Hatch et al. Hess et al, simply does not disclose or fairly suggest thermal spray coating of a second polymeric layer, or the coating layers to form the composite material claimed. Thus, withdrawal of this rejection is believed to be in order and it is respectfully requested.

Claims 1, 3, 11 and 13 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al in view of Hess et al and further in view of Fujita et al (U.S. Patent No. 5,296,682). This rejection is traversed for the following reasons.

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Hatch et al and Hess et al have been discussed above. Fujita et al relates to a curable resin composition comprising a reactive silicon group-containing oxypropylene polymer and an epoxy resin.

Fujita et al has been relied on for the alleged disclosure of a curable epoxy resin composition containing a bisphenol F/epichlorohydrin and diethylenetriamine. Official Action at page 5. Like Hatch et al and Hess et al, however, Fujita et al does not disclose or fairly suggest thermal spray coating of a second polymeric layer, or the coating layers to form the composite material claimed. Thus, even if combined in the manner suggested by the Examiner, the skilled artisan would not arrive at the claimed invention. Accordingly, withdrawal of this rejection is in order and it is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If the Examiner has any questions or concerns regarding this Amendment or the application in general, he is invited to contact the undersigned at his earliest convenience.

Respectfully submitted,

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